

WHAT IS CLAIMED IS:

1. A remote maintenance repeater used in a remote monitoring system,  
wherein the remote monitoring system includes a plurality of internetwork  
connectors that respectively connect a network with another network and a  
5 monitoring apparatus that monitors and remotely maintains the internetwork  
connectors, comprising:
- a command receiving unit that receives a command from the  
monitoring apparatus;
  - a destination selecting unit that selects a transfer destination device to  
10 which the command is to be transferred, wherein the transfer destination  
device is an internetwork connector or another remote maintenance repeater;
  - a command transmitting unit that transmits the command to the  
transfer destination device, at a specific frequency specific to the transfer  
destination device;
  - 15 a result receiving unit that receives a result of execution of the  
command from the transfer destination device at the specific frequency; and
  - a result transmitting unit that transmits the result to the monitoring  
apparatus.
- 20 2. The remote maintenance repeater according to claim 1, further  
comprising a substitute radio data relay unit that receives data from a specific  
internetwork connector by radio and transmits the data to another internetwork  
connector, upon occurrence of a malfunctioning in a network to which the  
internetwork connector is connected.

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3.        A remote maintenance repeater used in a remote monitoring system, wherein the remote monitoring system includes a plurality of internetwork connectors that respectively connect a network with another network and a monitoring apparatus that monitors and remotely maintains the internetwork  
5 . connectors, comprising:

        a command receiving unit that receives a command from the monitoring apparatus;

        an information obtaining unit that obtains an identification information for uniquely identifying a transfer destination device comprising an  
10 internetwork connector or another remote maintenance repeater, to which the command is transferred;

        a packet generating unit that generates a control packet including the identification information;

        a radio command transmitting unit that transmits the control packet  
15 and the command by radio at a predetermined frequency;

        a radio result receiving unit that receives a result of execution of the command by radio; and

        a result transmitting unit that transmits the result to the monitoring apparatus.

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4.        The remote maintenance repeater according to claim 3, further comprising a substitute radio data relay unit that receives data from a specific internetwork connector by radio and transmits the data to another internetwork connector, upon occurrence of a malfunctioning in a network to which the  
25 internetwork connector is connected.

5. An internetwork connector that connects a network with another network, comprising:

a radio command receiving unit that receives a command from a remote maintenance repeater by radio at a specific frequency specific to the

5 internetwork connector;

a command executing unit that executes the command; and

a radio result transmitting unit that transmits a result of execution to the remote maintenance repeater by radio at the specific frequency.

10 6. The internetwork connector according to claim 5, further comprising a communication unit that transmits the command to an internetwork connector, which does not have a radio communication function, connected to the same network and receives the result of execution via the network.

15 7. The internetwork connector according to claim 6, further comprising:

a malfunctioning detecting unit that detects a malfunctioning in a network to which the internetwork connector is connected;

a medium switching unit that switches a communication medium from the network to the radio based on the detection of malfunctioning;

20 a substitute data receiving unit that receives data from the remote maintenance repeater by radio; and

a substitute data transmitting unit that transmits the data to the remote maintenance repeater by radio.

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8. An internetwork connector that connects a network with another network, comprising:

5 a radio command receiving unit that receives a control packet and a command from a remote maintenance repeater by radio at a predetermined frequency;

a response judging unit that makes a judgment whether it is appropriate to respond to the remote maintenance repeater based on the identification information included in the control packet;

10 a responding unit that responds to the remote maintenance repeater based on the judgment;

a command executing unit that executes the command; and

a radio result transmitting unit that transmits a result of execution by radio at the predetermined frequency.

15 9. The internetwork connector according to claim 8, further comprising a communication unit that transmits the command to an internetwork connector, which does not have a radio communication function, connected to the same network and receives the result of execution via the network.

20 10. The internetwork connector according to claim 9, further comprising:

a malfunctioning detecting unit that detects a malfunctioning in a network to which the internetwork connector is connected;

a medium switching unit that switches a communication medium from the network to the radio based on the detection of malfunctioning;

25 a substitute data receiving unit that receives data from the remote

maintenance repeater by radio; and

a substitute data transmitting unit that transmits the data to the remote maintenance repeater by radio.

- 5     11.     A remote maintenance repeating method for a remote monitoring system, wherein the remote monitoring system includes a plurality of internetwork connectors that respectively connect a network with another network and a monitoring apparatus that monitors and remotely maintains the internetwork connectors, comprising:
- 10             receiving a command from the monitoring apparatus;
- selecting a transfer destination device comprising an internetwork connector or another remote maintenance repeater, to which the command is to be transferred;
- transmitting the command to the transfer destination device by radio
- 15     at a specific frequency specific to the transfer destination device;
- receiving a result of execution of the command from the transfer destination device by radio at the specific frequency; and
- transmitting the result to the monitoring apparatus.
- 20     12.     A maintenance method for an internetwork connector that connects a network with another network, comprising:
- receiving a command from a remote maintenance repeater by radio at a specific frequency specific to the internetwork connector;
- executing the command; and
- 25             transmitting a result of execution to the remote maintenance repeater

by radio at the specific frequency.

13. A computer program that realizes a remote maintenance repeating method for a remote monitoring system on a computer, wherein the remote  
5 monitoring system includes a plurality of internetwork connectors that respectively connect a network with another network and a monitoring apparatus that monitors and remotely maintains the internetwork connectors, the computer program making the computer execute:

receiving a command from the monitoring apparatus;

10 selecting a transfer destination device comprising an internetwork connector or another remote maintenance repeater, to which the command is to be transferred;

transmitting the command to the transfer destination device by radio at a specific frequency specific to the transfer destination device;

15 receiving a result of execution of the command from the transfer destination device by radio at the specific frequency; and

transmitting the result to the monitoring apparatus.

14. A computer program that realizes a maintenance method for an  
20 internetwork connector that connects a network with another network on a computer, the computer program making the computer execute:

receiving a command from a remote maintenance repeater by radio at a specific frequency specific to the internetwork connector;

executing the command; and

25 transmitting a result of execution to the remote maintenance repeater

by radio at the specific frequency.